

# BOOK OF ABSTRACTS

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## I. SESSION DESCRIPTION

**ID: S9a**

Participatory approaches for sharing knowledge on ecosystem services to improve food and water securities in the face of climate change

**Format:** Hybrid

**Hosts**

	Name	Organisation	E-mail
<b>Host</b>	Azeneth Schuler	Embrapa Solos	azeneth.schuler@embrapa.br
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	Elaine Fidalgo	Embrapa Solos	elaine.fidalgo@embrapa.br
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### Abstract

Among all sustainable development goals planned in the UN 2030 Agenda, SDG 2 - End hunger, promote sustainable agriculture and achieve food security and better nutrition, and SDG 6 - Ensure water and sanitation for all, are extremely concerning and linked to terrestrial and marine ecosystems conservation and climate change adaptation and mitigation action. Scientific communities have made efforts to understand the social, ecological and economical processes involved in ending hunger, providing water and sanitation access and combating climate change, in order to develop solutions for these global challenges. Meanwhile, there are a lot of communities engaged in solving quotidian problems related to hunger and malnutrition, lack of water and sanitation and the impacts of extreme climate events. Based on the assumption that joining civil society and scientists can strengthen their actions and drive decision making towards sustainability, this session invites experiences of science and society partnership aimed at studying ecosystems and their services and also thinking about and creating alternative ways of environmental management capable of achieving the targets of mentioned SDGs. We welcome initiatives of research and action

partnership carried out with urban and rural grassroots movements, schools, farmers associations, indigenous peoples, traditional communities, at local or higher territorial levels, and which include besides science data sampling and analysis, also educational and cultural activities aimed at mediating the dialogue on science and sustainable development between scientists and the general public or specific groups and communities. Sharing initiatives will be led through storytelling format, i.e., each participant in this session will present a story of the community or group activities focused at social learning on ecosystem services, Food and Water security and Climate Action. We ask participants to show successful and failed experiences during the development of the action or project, presenting their methods, approaches, results and lessons learned and pointing out main obstacles and weaknesses as well as solutions and strengths.

### Goals & Objectives

1. Sharing learning methods aimed at triggering social engagement within ecosystem services research projects related to food and water securities.
2. Sharing experiences and lessons learned from participatory research to promote climate change adaptation and resilient socioecological systems
3. Improving debate on main challenges for citizens' participation within science projects focused on contributions to SDG 2 - Zero hunger and sustainable agriculture, SDG 6 - Clean Water and Sanitation and SDG 13 - Climate Action, in order to build collaborative solutions.

### Planned Output

A portfolio of storytelling cases based on local initiatives targeting Food Security, Nutrition amelioration, Water Security and Climate Action in Latin America and Caribbean. A matrix of lessons learned with the challenges/ obstacles, potentials/ strengths and weaknesses/ failures of shared experiences according to targeted SDG in order to take advantage of these stories to build new successful ones on the struggle for life and livelihoods on earth and the universal human rights of food and nutrition and water and sanitation.

### Session Format

This will be a storytelling Session, where each participant will have 5-10 minutes to present the story of its project/ experience/ community in the field. Presentations will be grouped in blocks of 3 or 4 stories. After each block of stories, there will be time for asking questions and comments from participants. And eventually, after all blocks have been finished, there will be time (15 to 20 min) for hosts/ co-hosts to present a first version of a matrix of lessons learned and also to talk final remarks.

### Acceptance of voluntary contributions

Yes, I allow any abstract to be submitted to my session for review.

### Relation to ESP Working Groups or National Networks

Sectoral Working Groups: SWG 9 – Indigenous people & Local communities

## II. SESSION PROGRAMME

**Date of session:** Wednesday 8<sup>th</sup> November

**Time of session:** 14:30–15:30

### Timetable speakers

Time	First name	Surname	Organization	Title of presentation
14:30– 14:40	Itxaso	Ruiz	BC3 – Basque Centre for Climate Change, Ikerbasque – Basque Foundation for Science	Local perspectives on sustainable land management
14:40– 14:50	Andrée	De Cock	Department of Animal Sciences and Aquatic Ecology, Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium	Bayesian belief networks for integrated analysis of ecosystem services related to agricultural and fisheries activities in the Guayas river basin (Ecuador)
14:50– 15:00:	Pablo	Martínez de Anguita	HIDROCEC – Universidad Nacional de Costa Rica	Evaluación de los servicios ecosistémicos de los ríos involucrando a las comunidades y escuelas rurales. Tres casos de estudio en Honduras, República Dominicana y Costa Rica
15:00– 15:30				Questions and Discussion

### III. ABSTRACTS

#### 1. *Type of submission:* Itxaso Ruiz

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S9a – Participatory approaches for sharing knowledge on ecosystem services to improve food and water securities in the face of climate change

Local perspectives on sustainable land management

*First author(s):* Itxaso Ruiz

*Presenting author:* Itxaso Ruiz

*Other author(s):* João Pompeu, Antonio Ruano, María José Sanz

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Central Chile (32°–37° S latitudes) and east Spain share a Mediterranean climate characterized by temperate, rainy winters and hot, dry summers. The impacts of climate change are challenging in both regions facing land desertification, biodiversity decline, and water scarcity; overall, compromising their long-term sustainability. In this context, we share our experience in joining the local populations of a Mediterranean watershed in finding successful solutions to these issues while promoting ecosystem services in rural areas. We conducted a comprehensive assessment of the study site by not only examining its biogeographic characteristics in relation to the supply and demand of ecosystem goods and services but also by engaging in participatory processes to explore the social-ecological context. Our methods included twenty semi-structured interviews, a joint workshop, and several field trips with local participants. By involving the community in the search for solutions, we gained invaluable insights into the importance of integrating local knowledge of the territory, practices, ecosystem services, and the ability to adopt adaptation measures on the ground. We learned about the critical need for strategies that align with the

community's needs, capabilities, and sense of ownership, which can be sustained beyond scientific projects and electoral cycles. Additionally, we discovered the effectiveness of field trips as a methodology that can promote community-building through shared values. Overall, these lessons highlight the importance of taking a holistic and participatory approach to climate change adaptation, which considers both the biophysical and socio-economic dimensions of the problem and involves local populations in the search for solutions.

*Keywords:* social-ecological context; participatory processes; climate change adaptation

2. *Type of submission:* Andrée De Cock

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S9a – Participatory approaches for sharing knowledge on ecosystem services to improve food and water securities in the face of climate change

Bayesian belief networks for integrated analysis of ecosystem services related to agricultural and fisheries activities in the Guayas river basin (Ecuador)

*First author(s):* Andrée De Cock

*Presenting author:* Andrée De Cock

*Other author(s):* Marie Anne Eurie Forio, Luis Dominguez-Granda, Peter L. M. Goethals

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Water quality and ecosystem services in river basins worldwide are being affected by increasing activities of human origin. It is crucial to recognize and address the interconnectedness between the water–energy–food (WEF) elements and other Sustainable Development Goals (SDGs) while managing trade–offs. The Guayas river basin (GRB), which is the largest watershed in Ecuador, is experiencing the impacts of growing urbanization, agriculture, and industry. We explored the WEF interactions in the GRB in relation to the SDGs. Overcoming the challenge of geographical separation between sources of pressure and their impacts requires effective environmental and agricultural governance at watershed level to facilitate the necessary transition towards sustainable development. Specifically, implementing measures to reduce pollutant inputs in upstream systems will require legislative and financial support to resolve water quality issues to benefit downstream populations. To aid sustainable decision–making in the GRB, a Bayesian belief network (BBN) framework has been developed. The concepts discussed in this research can be applied to other river basins worldwide, as many face similar food production challenges that demand attention and action.

*Keywords:* SDGs, BBNs, trade–offs, WEF, river basin, Ecuador, food security

3. *Type of submission*: Pablo Martínez de Anguita

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S9a – Participatory approaches for sharing knowledge on ecosystem services to improve food and water securities in the face of climate change

Evaluación de los servicios ecosistémicos de los ríos involucrando a las comunidades y escuelas rurales. Tres casos de estudio en Honduras, República Dominicana y Costa Rica

*First author(s)*: Pablo Martínez de Anguita

*Presenting author*: Pablo Martínez de Anguita

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La valoración de los servicios ecosistémicos requiere una cuantificación de las funciones que realizan. Los servicios hídricos que generan los bosques pueden medirse a través de la estimación de la cantidad y calidad de agua que llevan los ríos a lo largo del ciclo hidrológico en una cuenca hidrográfica. Estas estimaciones requieren ser constantes a lo largo del tiempo y medibles en varios lugares. Las comunidades locales pueden desarrollar esta función de medición de parámetros básicos a partir de los cuales cuantificar los servicios ecosistémicos vinculados a la provisión de agua de una cuenca, una región o un país. Para ello necesitan ser involucradas en este proceso de un modo sistemático basado en la educación hídrica.

Esta contribución plantea como hacerlo a través de tres casos reales de estimación de estos parámetros a través de una suma de metodologías (algunas de elaboración propia) replicables y de bajo coste. Esta suma de metodologías fue diseñada para que las propias comunidades locales, especialmente las rurales, pudieran medir los parámetros básicos de los ríos sin necesidad de laboratorios o instrumental específico. Han sido implementadas con Juntas de Agua en República Dominicana, escuelas rurales y Juntas de Agua en Honduras y con ASADAS (Asociaciones Administradoras de los Sistemas de Acueductos y Alcantarillados comunales en Costa Rica) colaborando con las escuelas rurales en Costa Rica.

Se midieron diversos parámetros como la presencia de coliformes totales y fecales (*Escherichia coli*), el caudal, T<sup>a</sup>, pH, identificación de macroinvertebrados acuáticos como indicadores del estado ecológico de los ríos, a través de métodos simples, que fueron realizados por las comunidades y los niños de las escuelas guiados por el equipo investigador. La metodología fue planteada de tal forma que el coste de las estimaciones fuera gratuito y que resultara una actividad atractiva para los participantes, especialmente

para los niños y jóvenes. A este proceso de transferencia de conocimiento sobre los servicios hídricos de los ríos a través de fórmulas económicas y fáciles de ejecutar desde la escuela primaria y secundaria, lo denominamos educación hídrica. Esta educación, combinada con un proceso ambientalmente subsidiario de centralización de la información a la par que descentralización de la acción, puede generar una base de datos para la contabilidad de servicios ecosistémicos ramificados por todo un país o territorio. Así mismo, permite una toma de conciencia a nivel local del valor de este servicio, lo que puede favorecer los procesos de gobernanza participativa del agua, facilitando la creación de sistemas locales de cuidado y distribución de los servicios de los ecosistemas a través de la cooperación voluntaria y no coaccionada, en el marco de un bien común.

Se observó en los tres casos de estudio que, aunque la precisión de la estimación de parámetros no es muy muy alta, estas valoraciones permiten crear un sistema sencillo, replicable (se podrían obtener una gran cantidad de datos al extenderse la educación hídrica en el territorio), educativo (fomenta un proceso de educación hídrica comunitario desde la escolarización más básica), subsidiario (descentralizado en el cuidado y aporte local de datos de la cuenca y centralizado en la recolección de la información total) y participativo, que permite una estimación del valor del servicio ecosistémico hídrico generado en un territorio y su evolución a lo largo del tiempo.

*Keywords:* educación hídrica, subsidiariedad, participación, escuelas rurales, metodologías de cuantificación de servicios hídricos simplificadas